

AUTHORS: Tumarkin, G.Ts., and Khavinson,S.Ya.(Moscow) SOV/39-46-2-4/6

TITLE: The Investigation of Properties of Extremal Functions With the Aid of Duality Relations in Extremal Problems for Analytic Function Classes in Multiply Connected Domains (Issledovaniye svoystv ekstremal'nykh funktsiy s pomoshch'yu sootnosheniy dvoystvennosti v ekstremal'nykh zadachakh dlya klassov analiticheskikh funktsiy v mnogosvyaznykh oblastyakh)

PERIODICAL: Matematicheskiy sbornik, 1958, Vol 46, Nr 2, pp 195-228 (USSR)

ABSTRACT: The linear extremal problem already several times was connected with the problem of the best approximation in the conjugate space. The most general function classes were considered by Khavinson [Ref 14]. The present paper at the one hand is a continuation and on the other hand it is a generalization of [Ref 14]. The authors establish duality relations for analytic function classes in finitely connected domains under final assumptions which can not be improved. That admits a very general investigation of the extremal functions. For a corresponding specialization, the results yield the older results of several authors (e.g. Penez [Ref 20]). For the proofs the authors use essentially the own earlier results [Ref 6,7,8,9,10,11] on analytic function classes in multiply connected domains. The

Card 1/2

The Investigation of Properties of Extremal Functions      SOV/39-46-2-4/6  
With the Aid of Duality Relations in Extremal Problems  
for Analytic Function Classes in Multiply Connected Domains

paper contains about 40 theorems and lemmas.  
There are 23 references, 16 of which are Soviet, 2 English,  
4 American, and 1 French.

SUBMITTED: April 8, 1957

Card 2/2

AUTHOR: Tumarkin, G.Ts. and Khavinson, S.Ya. 20-119-2-5/60/  
TITLE: The Properties of the Extremum Functions in Extremum Problems  
for Some Classes of Analytic Functions With a Weighted Metric  
(Svoystva ekstremal'nykh funktsiy v ekstremal'nykh zadachakh  
dlya nekotorykh klassov analiticheskikh funktsiy s vzzveshennoy  
metrikoy) SSSR  
PERIODICAL: Doklady Akademii Nauk, 1958, Vol 119,Nr 2,pp 215-218 (USSR)  
ABSTRACT: As it is well-known, there exists a duality between the linear  
extremum problem and the problem of the best approximation in  
the conjugate space. In the present paper the authors form-  
ulate several relations of duality for different classes of  
analytic functions, where the assumptions are very general.  
As special cases there result numerous well-known results of  
the authors and others. There are 14 references, 9 of which  
are Soviet, 3 American, and 2 English.  
PRESENTED: September 6, 1957, by M.A.Lavrent'yev, Academician  
SUBMITTED: August 20, 1957  
AVAILABLE: Card 1/1

PHASE I BOOK EXPLOITATION	SOV/3177
16(0) Matematika v SSSR za dobro let, 1917-1957, tom 1: Obozrynye stat'yi (Mathematics in the USSR for Forty Years, 1917-1957, Vol. 1: Review Articles) Moscow, Fizmatgiz, 1959. 1002 p. 5,500 copies	
Eds: A. G. Kurosh, (Chief Ed.), V. I. Bitutskov, V. G. Baisanachy, Ye. B. Dynkin, O. Ye. Shilova, and A. P. Yushkevich Ed. (In the book); A. P. Laptov Tech. Ed.; S. M. Akhiezer.	
PURPOSE: This book is intended for mathematicians and historians of mathematics interested in Soviet contributions to the field.	
COVERAGE: This book is Volume I of a major 2-volume work on the history of Soviet mathematics. Volume I surveys the chief contributions made by Soviet mathematicians during the period 1947-1957; Volume II will contain a bibliography of major works since 1917 and biographical sketches of some of the leading mathematicians. This work follows the tradition set by two earlier works: Matematika v SSSR za pyatnacte let (Mathematics in the USSR for 15 Years) and Matematika v SSSR za tridtsat let (Mathematics in the USSR for 30 Years). The book is divided into the major divisions of the field, i.e., algebra, topology, theory of probabilities, functional analysis, differential equations and outstanding problems in each discussed. A listing of some 1100 Soviet mathematicians is included with references to their contributions in the field.	
Kortchnikov, S. M. and L. P. Matanov. Metric and Contractive Functions of a Real Variable	295
Introduction	295
1. General problems of analysis and the theory of functions of several variables	299
2. Summation of numerical series, sequences, derivatives, and integrals	304
3. Trigonometric series	307
4. Various linear approximation operations	317
5. Direct and converse theorems of the constructive theory of functions for approximation by trigonometric and algebraic polynomials	326
6. The upper bounds of the deviations of approximations	332
7. Operations on classes of functions	334
8. Orthogonal and bi-orthogonal systems. Bases	338
9. The theory of differentiable functions of many variables	342
10. Geometric problems of the theory of functions	346
11. Set functions	347
12. Certain common types of integrals	352
13. Entire functions of finite degree	352
14. Weighted approximations on the whole axis	357
15. Polynomials of the best approximation	357
16. Polynomials of the best approximation with supplementary conditions	363
17. Almost periodic functions	369
18. Quasiperiodic functions	371
19. Theory of elements	372
20. Orthogonal polynomials	376
21. Special functions	378
Theory of Functions of a Complex Variable	381
Olejnik, A. O. Introduction	381
Margelyan, S. N. Approximations of Functions of a Complex Variable	383
Tsvetkov, N. A. Interpolation of Entire Functions	398
Sumarkin, G. Ts. and S. Ya. Khavinson. Power Series and Their Generalization. Problems of Conformity. Boundary properties	407
Basilevich, I. Ye. Geometric Theory of Functions	414
Introduction	414
1. Univalent Functions in a circle	416
2. Univalent functions in multiply connected regions	420
3. Multivalent functions	423

16(1)

AUTHORS: Tumarkin, G.Ts., Khavinson, S.Ya. SOV/42-14-3-13/22

TITLE: Mutual Orthogonality of the Boundary Values of Some Classes  
of Analytic Functions in Multiply Connected DomainsPERIODICAL: Uspekhi matematicheskikh nauk, 1959, Vol 14, Nr 3,  
pp 173 - 180 (USSR)

ABSTRACT: Let the boundary  $\Gamma$  of the n-times connected domain  $G$  consist of  $n$  rectifiable Jordan curves  $\gamma_1, \dots, \gamma_n$ . Two function classes  $K_1$  and  $K_2$  defined on  $\Gamma$  are called mutually orthogonal, if for  $\alpha(\xi) \in K_1$  and  $f(\xi) \in K_2$  it is always  $\int \alpha(\xi)f(\xi)d\xi = 0$ , and if furthermore from the orthogonality of a function to the class  $K_1$  (or  $K_2$ ) it follows that it belongs to  $K_2$  (or  $K_1$ ). Let the class  $E_p(G)$  consist of the functions  $\alpha(z)$  for which it is

$$\lim_{j \rightarrow \infty} \int_{\Gamma^j} |\alpha(z)|^p dz < \infty, \text{ where } \{\Gamma^j\} \text{ converges to } \Gamma; \Gamma^j \subset G.$$

Card 1/2

Mutual Orthogonality of the Boundary Values of Some  
Classes of Analytic Functions in Multiply Connected Domains

SOV/42-14-3-13/22

Theorem: The classes  $E_p(\Gamma)$  and  $E_q(\Gamma)$  are mutually or-  
thogonal,  $p > 1$ ,  $q > 1$ ,  $\frac{1}{p} + \frac{1}{q} = 1$ .

Five further theorems are given which are partly generaliza-  
tions of well-known results to multiply connected domains,  
partly special cases of former results of Tamarkin, partly  
strengthenings of the theorems of Penez [Ref 9].  
The author mentions : V.I. Smirnov, N.V. Keldysh and N.A.  
Lavrent'yev.  
There are 10 references, 8 of which are Soviet, and 2  
American.

SUBMITTED: April 8, 1957

Card 2/2

66156

SOV/20-128-5-8/67

16(1) 16,3000

AUTHOR: Khavinson, S.Ya.

TITLE: The Analytic Capacity of Plane Sets, Some Classes of  
Analytic Functions and the Extremum Function in the Schwarz  
Lemma for Arbitrary Regions

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 5, pp 896-898 (USSR)

ABSTRACT: Let  $D$  be a finitely connected domain with a rectifiable boundary. Let the class  $E_p(D)$  be defined as in [Ref 3-57]. Let  $\{G_n\}$  be a sequence of finitely connected domains with rectifiable boundaries  $\Gamma_n$  the union of which is  $G$ . For a function analytic in  $G$   $f(z)$  it is written  $f(z) \in E_p(\{G_n\})$ , if in  $G$  there exists a sequence  $\varphi_m(z)$  uniformly converging to  $f(z)$  with the properties: 1.)  $\varphi_m(z) \in E_p(G_{n_m})$ , where  $n_m \rightarrow \infty$  for  $m \rightarrow \infty$ . 2.) It exists a number  $M(f) < +\infty$ , so that  $\int_{G_{n_m}} |\varphi_m(z)|^p ds \leq M(f)$ . Moreover if it is  $M(f) \leq 1$ , then let  $\checkmark$

Card 1/3

56156

SOV/20-128-5-6/67

The Analytic Capacity of Plane Sets, Some Classes of Analytic Functions  
and the Extremum Function in the Schwarz Lemma for Arbitrary Regions

$f(z) \in E_p^1(\{G_n\})$ . The analytic capacity  $\Omega$  is defined by

$\Omega(\Gamma, K, z_0) = \sup_{f \in K} |f'(z_0)|$ . Theorem 1:  $\Omega(\Gamma, E_p^1(\{G_n\})) =$

$[\Omega(\Gamma)]^{1/q} (2\pi)^{-1/p}$ ,  $p \geq 1$ ,  $\frac{1}{p} + \frac{1}{q} = 1$ , where  $\Omega(\Gamma) = \Omega(\Gamma, B^1(G))$

and  $B^1(G)$  is the class of functions, the absolute value of

which in  $G$  is  $\leq 1$ . Theorem 2:  $\max_{f \in E_2^1(\{G_n\})} |f(z_0)| =$

$= [\Omega(\Gamma, z_0)]^{1/2} (2\pi)^{-1/2}$ . By means of these theorems the  
author investigates the question when the considered functions  
are not trivial (do not only consist of constants). He con-  
siders properties of the extremum function in the Schwarz  
lemma for the domain  $G$ . He gives 7 theorems.

4

Card 2/3

66156

SOV/20-128-5-8/67

The Analytic Capacity of Plane Sets, Some Classes of Analytic Functions  
and the Extremum Function in the Schwarz Lemma for Arbitrary Regions

There are 9 references, 4 of which are Soviet, 3 American,  
1 Swedish, and 1 Swiss.

ASSOCIATION: Moskovskiy inzhenerno-stroitel'nyy institut imeni V.V.  
Kuybysheva (Moscow Civil Engineering Institute imeni V.V.  
Kuybyshev)

PRESENTED: May 8, 1959, by I.N. Vekua, Academician

SUBMITTED: April 24, 1959

4

Card 3/3

66404

9

SOV/20-128-6-8/63

16(1) 163000  
 AUTHOR: Khavinson, S.Ya.

TITLE: The Analytic Capacity of Sets and Mass Distributions

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1129-1131 (USSR)

ABSTRACT: The author uses notions and definitions of his preceding paper.  
 Let  $l(\Gamma)$  denote the length of the set  $\Gamma$  according to Painlevé.  
 Theorem 1: If  $l(\Gamma) < +\infty$ , then every function  $f(z)$  bounded in  $G$   
 can be represented by the Cauchy-Stieltjes integral

$$(1) \quad f(z) = \int_{\Gamma} \frac{d\mu}{z - z},$$

where  $\mu$  is a certain complex measure defined on  $\Gamma$ . Here  
 $\int |d\mu| \leq Ml(\Gamma)$ ,  $M = \sup |f(z)|$ .

Conclusion:  $\Omega(\Gamma) = \max \int_{\Gamma} |d\mu|$ , where max is extended over all

measures  $\mu$  for which  $\left| \int_{\Gamma} \frac{d\mu}{z - z} \right| \leq 1$ ,  $z \in G$ .

Herewith the analytic capacity is combined with the mass  
 distribution. X

Card 1/3

66404

The Analytic Capacity of Sets and Mass Distributions SOV/20-128-6-8/63

Theorem 2: In an arbitrary domain  $G$ ,  $G \ni \infty$  there exists an analytic function (kernel)  $L(z)$  with the following properties:

1)  $L(z) = 1 + 0\left(\frac{1}{z^2}\right)$  is unique in the neighborhood of  $\infty$ ,  $L(z) \neq 0$

and  $\ln L(z)$ ;

$$(2) \quad L(z) = 1 + \int_{\Gamma} \frac{d\mu_L}{z - z}$$

where  $\int_{\Gamma} |d\mu_L| \leq \Omega(\Gamma)$ ; 3) an arbitrary  $f(z)$ ,  $f(\infty) = 0$ ,  $|f(z)| \leq 1$

has the representation

$$(3) \quad f(z) = \frac{1}{L(z)} \int_{\Gamma} \frac{d\mu}{z - z}$$

where  $\int_{\Gamma} |d\mu| \leq \Omega(\Gamma)$ ; 4) for the extremal function  $f^*(z)$  -

normalization  $\lim_{z \rightarrow \infty} zf^*(z) > 0$  - the set function  $\mu^*$  is positive

X

Card 2/3

MARKUSHEVICH, A.I., red.; VIDEWSKIY, V.S., red.; KHAVINSON, S.Yo.;  
MURASHOVA, N.Ya., tekhn.red.

[Investigation in contemporary problems in the theory of  
functions of complex variables; collection of articles] Issle-  
dovaniia po sovremenym problemam teorii funktsii kompleksnogo  
peremennogo; sbornik statei. Moscow, Gos.izd-vo fiziko-matem.  
lit-ry, 1960. 544 p. (MIRA 13:3)  
(Functions of complex variables)

KHAVINSON, S.Ya.

Continuity of theoretical-functional null sets. Sbor.trud.MISI  
no.38:127-136 '60. (MIRA 14:10)  
(Functions) (Aggregates)

KHAVINSON, S.Ya.

One extremum problem for class H<sub>2</sub> analytic functions. Sbor. trud.  
MISI no.38:137-141 '60. (MIRA 14:10)  
(Functions, Analytic)

85947

S/039/60/052/001/009/009 XX  
C111/C222

16.3000

AUTHORS: Alenitsyn, Yu.Ye. (Leningrad), and Khavinson, S.Ya. (Moscow)TITLE: On the Radius of p-Sheetedness for Bounded Analytic Functions  
in Multiply Connected Domains

PERIODICAL: Matematicheskiy sbornik, 1960, Vol. 52, No. 1, pp. 653-657

TEXT: Let the finite n-fold connected domain  $G$  of the  $z$ -plane be bounded by  $n$  non-degenerated closed analytic curves. Let  $z_0 \in G$  and  $A_0, A_1$  be complex numbers.  $B(A_0, A_1)$  denotes the class of functions  $f(z)$  analytic and unique in  $G$ , for which  $|f(z)| \leq 1$ ,  $z \in G$  and  $f(z_0) = A_0$ ,  $f'(z_0) = A_1$ .Theorem: For every  $p \geq 1$ , integral, all functions of the family  $B(A_0, A_1)$ , where  $|A_0| < 1$ ,  $0 < |A_1| < (1 - |A_0|^2)^{1/p}$ , are not more than  $p$ -sheeted in the circle  $|z - z_0| < r_p$ , lying in  $G$  together with its boundary; there exist functions of this family (extremal functions) being at least Card 1/2

68603

S/020/60/130/05/012/061

16(1) 16,4600

AUTHOR: Khavinson, S.Ya.

TITLE: A Class of Extremum Problems ✓

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 997-1000 (USSR)

ABSTRACT: Let  $E$  be a locally convex linear topological space;  $p(x)$  a continuous, symmetric, convex functional on  $E$ ;  $E_n$  an  $n$ -dimensional linear space consisting of the points  $(\lambda) = (\lambda_1, \dots, \lambda_n)$  with a locally convex topology;  $p_1(\lambda) = p_1(\lambda_1, \dots, \lambda_n)$  continuous symmetric convex functional on  $E_n$ . Let  $y, x_1, \dots, x_n$  be linearly independent elements of  $E$ . The linear combinations  $\sum_{y=1}^n \lambda_y x_y$  are denoted as polynomials.

Problem I  $[p, p_1]$  : Determine

(1)  $\mathcal{L} = \inf_{\lambda_1, \dots, \lambda_n} \left[ p(y - \sum_{y=1}^n \lambda_y x_y) + p_1(\lambda_1, \dots, \lambda_n) \right]$  ✓

Card 1/4

13

68603

## A Class of Extremum Problems

S/020/60/130/05/012/061

Problem II : Determine

$$(2) \quad \beta = \sup |f(y)| ,$$

where the sup is taken over all continuous linear functionals  
 $f \in E^*$  which satisfy the conditions

$$(3) \quad |f(x)| \leq p(x) , \quad x \in E$$

$$(4) \quad |\sum \lambda_y f(x_y)| \leq p_1(\lambda_1, \dots, \lambda_n) \quad \text{for all } (\lambda) \in E_n .$$

Theorem 1 :  $\alpha = \beta$ . Several examples are given.

Theorem 2 : There exist extremum polynomials  $P^* = \sum_1^n \lambda_y^* x_y$

in the problem I and extremum functionals  $f^*$  in problem II.  
In order that  $P^*$  be extremum in problem I and  $f^*$ , which satisfies (3)-(4), be extremum in problem II, it is necessary and sufficient that

Card 2/4

$$(13) \quad f^*(y - P^*) = e^{i\theta} p(y - P^*)$$

## A Class of Extremum Problems

68603

S/020/60/130/05/012/061

$$(14) \quad f^*(P^*) = \sum_1^n \lambda_j^* f^*(x_j) = e^{i\theta} p_1(\lambda_1^*, \dots, \lambda_n^*)$$

where  $\theta$  is a real number.

Theorem 3 contains a criterion of uniqueness analogous to that of M.G. Kreyn in / Ref 1 /.

Let  $B$  be the convex body in  $R_n$  generated by the points  $(f(x_1), \dots, f(x_n))$ ;  $f(x)$  satisfies (3).

Theorem 4 : If  $E$  is rigorously normed with the norm  $p(x)$ ; and if  $f^*(x)$  is the extremum functional of problem II, then  $(f^*(x_1), \dots, f^*(x_n))$  is an internal point of  $B$ . (If  $E$  is not rigorously normed, then  $(f^*(x_1), \dots, f^*(x_n))$  can lie also on the boundary of  $B$ ).

Theorem 5 is a special statement of existence. Theorem 6 gives necessary and sufficient conditions that

$$P^*(t) = \sum_1^n \lambda_j^* x_j(t)$$

Card 3/4

14

68603

A Class of Extremum Problems

S/020/60/130/05/012/061

is extremum for problem I  $[c(Q), p_1]$  ( $Q$  a compact).

In the theorems 7 - 9 the author considers the case, where  $x_1(t), \dots, x_n(t)$  is a system of P.L. Chebyshev.

Ye. Ya. Remez and A.N. Kolmogorov are mentioned in the paper.

There are 12 references, 10 of which are Soviet, 1 Swedish, and 1 French.

PRESENTED: October 20, 1959, by S.N. Bernshteyn, Academician

SUBMITTED: September 29, 1959

✓

Card 4/4

46(1) / 6.3000

68802  
S/020/60/131/01/011/060AUTHOR: Khavinson, S.Ya.TITLE: Approximation on Sets of Zero Analytical Capacity

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 1, pp 44-46 (USSR)

ABSTRACT: Let  $G$  be a domain with the boundary  $\Gamma$ ;  $\infty \in G$ . The author uses notions and notations of his former contributions [Ref 1,2].  
 Theorem 1: Let  $\Gamma$  have the analytic capacity zero ( $\Omega(\bar{\Gamma}) = 0$ ); let  $q \geq 1$ . Then to every  $\epsilon > 0$  there exists a neighborhood  $d$  of  $\Gamma$ :  $d \supset \Gamma$ , such that for every finitely connected domain  $D \subset G$ , the boundary  $\Gamma_D$  of which is rectifiable and lies in  $d$ , it holds:

$$(1) \quad \inf_{\varphi \in E_q(D)} \int_D |1 + \varphi(\xi)|^q ds < \epsilon$$

$$\varphi(\infty) = 0, \varphi'(\infty) = 0$$

Conversely: If (1) holds for a  $q = q_0 \geq 1$  and every  $\epsilon > 0$ ,

Card 1/4

X

68802

Approximation on Sets of Zero Analytical Capacity S/020/60/131/01/011/060

then it is  $\Omega(\Gamma) = 0$ .

Theorem 2 : Let  $\Omega(\Gamma) = 0$  and  $F(z)$  be analytic on  $\Gamma$ ;  $q = 1$  or  $q = 2$ . For every sequence of finitely connected domains

$\{G_n\}$  of union  $G$  which have rectifiable boundaries  $\Gamma_n$ , it is

$$(2) \quad \lim_{n \rightarrow \infty} \inf_{\varphi \in E_q(G_n)} \int_{\Gamma_n} |F(s) + \varphi(s)|^q ds = 0$$

$$\varphi(\infty) = 0$$

Theorem 3 : Let  $\Omega(\Gamma) = 0$  and let the length  $l(\Gamma)$  of the set  $\Gamma$  according to Painleve be finite;  $F(z)$  is assumed to be continuous in a neighborhood of  $\Gamma$ . (2) holds for every  $q \geq 1$ , where it must be  $\overline{\lim} l(\Gamma_n) < +\infty$ .

Theorem 4 : Let  $F(z) \in E_1(\{G_n\})$  and  $\Phi(z)$  be analytic on  $\Gamma$ . Then for all sufficiently large  $K > 0$  it holds :

X

Card 2/4

68802

Approximation on Sets of Zero Analytical Capacity S/020/60/131/01/011/060

$$(6) \sup_{\substack{f \in B'(G) \\ f(\infty)=0}} \left| \int f(\zeta) F(\zeta) \phi(\zeta) d\zeta \right| = \inf_{\{a_y\} \subset G} \left[ \max_{\zeta \in \Gamma} |\phi(\zeta)| + \right.$$

$$\left. + \sum_{y=1}^n \frac{\lambda_y}{|\zeta - a_y|} + \sum_{y=1}^n |\lambda_y F(a_y)| \right] .$$

Theorem 5 : In order that  $\Omega(\Gamma) = 0$  it is necessary and for  $L(\Gamma) < +\infty$  also sufficient that to every  $\epsilon > 0$  there are points  $a_1, \dots, a_n \in G$  and numbers  $\lambda_1, \dots, \lambda_n$  such that

$$(9) \quad \max_{\zeta \in \Gamma} \left| 1 + \sum_1^n \frac{\lambda_y}{\zeta - a_y} \right| < \epsilon , \quad \sum_1^n |\lambda_y| < \epsilon$$

Theorem 6 : If  $\Omega(\Gamma) = 0$  and if  $\Psi(z)$  is continuous on  $\Gamma$ , then to every  $\epsilon > 0$  there exist points  $a_1, \dots, a_n \in G$  and numbers

X

Card 3/4

KHAVINSON, S.Ya.

Radius of holomorphism of functions inverted to functions  
bounded and analytic in multiply connected regions. Izv.  
vys ucheb.zav.;mat.no.5:190-194 '60. (MIHA 13:10)

1. Moskovskiy inzhenerno-stroitel'nyy institut.  
(Functions, Analytic)

KHAVINSON, S.Ya.

Approximations in which the values of the coefficients of the  
approximating aggregates are taken into account. Trudy/Mat.  
inst. no.60:30-324 '61. (MIRA 14:10)  
(Approximate computation)

16.4960 (1031, 1327, 1344)

26762  
S/038/61/025/004/003/003  
C111/C444

AUTHOR: Khavinson, S. Ya.

TITLE: On two classes of extremal problems for polynomials  
and momentsPERIODICAL: Akademiya nauk SSSR. Izvestiya, Seriya matematicheskaya,  
v.25, no.4, 1961, 557-590TEXT: Let  $E$  be a locally convex linear topological space;  
 $p(x)$  be a continuous symmetric convex functional on  $E$ ;  $E_n$  be the  
 $n$ -dimensional linear space of the points  $(\lambda) = (\lambda_1, \dots, \lambda_n)$  with lo-  
cally convex topology;  $p_1(\lambda) = p_1(\lambda_1, \dots, \lambda_n)$  be a continuous symme-  
tric convex functional on  $E_n$ . Let  $y, x_1, \dots, x_n$  be linearly indepen-  
dant elements of  $E$ .  
There is considered:  
Problem I.: Determine

Card 1/11

$$\alpha = \inf_{(\lambda) = (\lambda_1, \dots, \lambda_n)} \left[ p(y - \sum_{v=1}^n \lambda_v x_v) + p_1(\lambda_1, \dots, \lambda_n) \right] \quad (1)$$

On two classes of extremal problems...

26762  
S/038/61/025/004/003/003  
C111/C444

Problem II.: Determine

$$\beta = \sup |f(y)|$$

+

over all continuous linear functionals  $f \in E^*$ , satisfying the follow-  
ing conditions:

$$|f(x)| \leq p(x) \text{ for all } x \in E, \quad (3)$$

$$\left| \sum_{v=1}^n \lambda_v f(x_v) \right| \leq p_1(\lambda_1, \dots, \lambda_n) \text{ for all } (\lambda). \quad (4)$$

Several special cases of the two problems are formulated.  
Let  $Q$  be a compact;  $y(t), x_1(t), \dots, x_n(t)$  be continuous functions.Problem I<sub>[C(Q), p\_1]</sub>: Determine

$$\inf_{(\lambda)} \left[ \max_{t \in Q} \left| y(t) - \sum_{v=1}^n \lambda_v x_v(t) \right| + p_1(\lambda_1, \dots, \lambda_n) \right]. \quad (5)$$

Let  $\mu$  be a non-negative measure which is defined on the skew field  
of the measurable subsets of an abstract space  $Q$ .  
Card 2/11

On two classes of extremal problems...

26762  
S/038/61/025/004/003/003  
C111/C444

The space  $L_{\mu}^p(Q)$  on  $Q$  consists of functions, the  $p^{\text{th}}$  power of which is  $\mu$ -integrable. If one replaces the uniform metric by the integral one, one gets to

Problem I  $[L_{\mu}^p(Q), p_1]$  : Determine

$$\inf_{(\lambda)} \left[ \left( \int_Q |y(t) - \sum_{v=1}^n \lambda_v x_v(t)|^p d\mu \right)^{\frac{1}{p}} + p_1(\lambda_1, \dots, \lambda_n) \right]. \quad (8)$$

One obtains similarly

Problem II  $[C(Q), p_1]$  : Determine

$$\sup_g \left| \int_Q y(t) dg \right| \quad (12)$$

over all measures  $dg$  on  $Q$  under the condition

$$\int_Q |dg| \leq 1 \quad (13)$$

*[Signature]*

Card 3/11

On two classes of extremal problems...

26762  
S/038/61/025/004/003/003  
C111/C444

and for moments  $C_v = \int_Q x_v(t) dg$  such that for arbitrary  $(\lambda) = (\lambda_1, \dots, \lambda_n)$  holds

$$\left| \sum_1^n \lambda_v C_v \right| \leq p_1(\lambda_1, \dots, \lambda_n). \quad (14)$$

Problem II  $[L_n^q(Q), p_1]$ ,  $1 \leq q < \infty$ : Determine

$$\max \left| \int_Q \alpha(t) y(t) d\mu \right| \quad (22)$$

over all functions  $\alpha$  under the condition

$$\int_Q |\alpha(t)|^q d\mu \leq 1 \quad (23)$$

and for such moments

$$C_v = \int_Q x_v(t) \alpha(t) d\mu, \quad (24)$$

Card 4/11

On two classes of extremal problems...  
that

<sup>26762</sup>  
S/038/61/025/004/003/003  
C111/C444

$$\left| \sum_{v=1}^n c_v \lambda_v \right| \leq p_1(\lambda_1, \dots, \lambda_n). \quad (25)$$

In §1 of the paper these and more special problems are defined and six theorems on the general problems I and II are proved, e. g.

Theorem 1.: The extremal values  $\alpha$  and  $\beta$  in the problems I and II are equal.

$$\alpha = \beta \quad (26)$$

Theorem 2.: There exist extremal polynomials  $P^* = \sum_{v=1}^n \lambda_v^* x_v$  in

problem I and extremal functionals  $f^*$  in problem II. In order that  $f^*$  be an admissible functional which is extremal in problem II, and in order that  $P^*$  be extremal in problem I, it is necessary and sufficient that simultaneously

$$f^*(y - P^*) = e^{i\theta} p(y - P^*), \quad (39)$$

$$\sum_{v=1}^n \lambda_v^* f^*(x_v) = e^{i\theta} p_1(\lambda_1^*, \dots, \lambda_n^*) \quad (40)$$

Card 5/11

26762  
S/038/61/025/004/003/003  
C111/C444

~~X~~

On two classes of extremal problems...

are satisfied ( $Q$  being an arbitrary real number) and that for all  $(\lambda)$

$$\left| \sum_{v=1}^n \lambda_v f^*(x_v) \right| \leq p_1(\lambda_1, \dots, \lambda_n). \quad (41)$$

Theorem 4. 1<sup>o</sup>; If the point  $(\lambda^*)$  is such that for all  $(\lambda)$  in a certain neighborhood of  $(\lambda^*)$ :

$$p(y + \sum_{v=1}^n \lambda_v^* x_v) + p_1(\lambda_1^*, \dots, \lambda_n^*) \leq p(y - \sum_{v=1}^n \lambda_v x_v) + p_1(\lambda_1, \dots, \lambda_n), \quad (46)$$

then  $P^* = \sum_{v=1}^n \lambda_v^* x_v$  is the solution of the problem I.

2<sup>o</sup>; Let  $A$  be the set of all functionals on  $E^*$  which satisfy (3) and (4). If  $f^* \in A$  has a neighborhood  $S \subset E^*$  such that for all  $f \in S \cap A$

$$|f^*(y)| \geq |f(y)|, \quad (47)$$

then  $f^*$  is the solution of problem II.

Card 6/11

26762

On two classes of extremal problems... S/038/61/025/004/003/003  
C111/C444

In §2 the problems I <sub>$\mu$</sub> [L<sup>p</sup>(Q), p<sub>1</sub>] and II <sub>$\mu$</sub> [L<sup>q</sup>(Q), p<sub>1</sub>] are considered

(y(t), x<sub>1</sub>(t), ..., x<sub>n</sub>(t) ∈ L<sup>p</sup> <sub>$\mu$</sub> (Q), and are linear independant) and eight theorems are proved, e. g.

Theorem 7: In order that P\*(t) =  $\sum_{v=1}^n \lambda_v^* x_v(t)$  be the solution of

I <sub>$\mu$</sub> [L<sup>p</sup>(Q), p<sub>1</sub>], p > 1, and that  $\alpha^*(t)$  be the solution of II <sub>$\mu$</sub> [L<sup>q</sup>(Q), p<sub>1</sub>],

$\frac{1}{p} + \frac{1}{q} = 1$ , it is necessary and sufficient that the set Q<sub>1</sub>, where

$\alpha^*(t) = 0$ , is equal (except for a set of the  $\mu$ -measure 0) to the set Q<sub>2</sub>, where y(t) - P\*(t) = 0, and that on Q/Q<sub>1</sub>,

$$\alpha^*(t) = Ae^{i\theta} \frac{|y(t) - P^*(t)|^p}{y(t) - P^*(t)}, A > 0, \quad (50)$$

Card 7/11

On two classes of extremal problems...

26762  
S/038/61/025/004/003/003  
C111/C444

~~X~~

where  $\theta$  is a real number,  
or which is the same,

$$y(t) \sim P^*(t) = Be^{i\theta} \frac{|\alpha^*(t)|^q}{\alpha^*(t)}, \quad B > 0. \quad (51)$$

Besides, the conditions

$$\int_Q |\alpha^*(t)|^q d\mu = 1, \quad (52)$$

$$\int_Q \alpha^*(t) P^*(t) d\mu = e^{i\theta} p_1(\lambda_1^*, \dots, \lambda_n^*), \quad (53)$$

and for an arbitrary  $P(t) = \sum_{v=1}^n \lambda_v x_v(t)$  the condition

$$\left| \int_Q \alpha^*(t) P(t) d\mu \right| \leq p_1(\lambda_1, \dots, \lambda_n). \quad (54)$$

must be satisfied.

Card 8/11

On two classes of extremal problems... 26762  
 S/038/61/025/004/003/003  
 C111/C444

The extremal  $P^*(t)$  and  $\alpha^*(t)$  are uniquely determined.

In §3 the problems I  $[C(Q), p_1]$  and II  $[C(Q), p_1]$  are considered and nine

theorems are proved; e. g.:

Theorem 17: In order that  $P^*(t) = \sum_{v=1}^n \lambda_v^* x_v(t)$  be extremal in prob-  
 lem I  $[C(Q), p_1]$ , it is necessary and sufficient that there exist r  
 points  $t_1, \dots, t_r$  ( $r \leq n + 1$  in the real case and  $r \leq 2n + 1$  in the  
 complex one) in  $D_{y..P^*}$ , positive numbers  $\mu_1, \dots, \mu_r$  and real numbers  
 $\theta_1, \dots, \theta_r$  such that

$$y(t_j) - P^*(t_j) = M e^{-i\theta_j}, \quad j = 1, \dots, r, \quad M = \max_{t \in Q} |y(t) - P^*(t)|, \quad (76)$$

$$\sum_{j=1}^r P^*(t_j) \mu_j e^{i\theta_j} = p_1(\lambda_1^*, \dots, \lambda_n^*), \quad \sum_{j=1}^r \mu_j = 1, \quad (77)$$

Card 9/11

X

On two classes of extremal problems...

26762  
S/038/61/025/004/003/003  
C111/C444

are satisfied and for every  $P(t) = \sum_1^n \lambda_j x_j(t)$  holds

$$\left| \sum_{j=1}^r P(t_j) \mu_j e^{i\theta_j} \right| \leq p_1(\lambda_1, \dots, \lambda_n). \quad (78)$$

There  $D_f$  denotes the set of those points of the compact set  $Q$ , in which  $|f(t)|$ , (where  $f(t)$  is a function continuous on  $Q$ ), takes its maximum.

Besides of the 23 theorems some lemmata, conclusions and corrolaries of the theorems are proved.

The author mentions: D. L. Chebyshev, Ye. Ya. Remez, A. A. Markov, M. G. Kreyn, S. M. Nikols'kiy, A. N. Kolmogorov, L. G. Shnirel'man, V. S. Videnskiy.

There are 34 Soviet-bloc and 7 non-Soviet-bloc references. The four references to English-language publications read as follows: Rogo-sinski W. W., Continuous linear functionals on subspaces  $L^p$  and  $C$ , Proc. London Math. Soc., (3), 6, no. 2, (1956), 175 - 190.

Card 10/11

26762

On two classes of extremal problems...

S/038/61/025/004/003/003  
C111/C444

Rogosinski, W. W., Extremum problems for polynomials and trigonometrical polynomials, Journ. London Math. Soc., 29, no. 3 (1954), 259 - 275. Rogosinski W. W., Linear extremum problems for real polynomials and trigonometrical polynomials, Arch. Math., 5, no. 1 - 3(1954), 182-190; Corrigenda 6, no. 1(1955), 87. Rogosinski, W. W., On finite systems of linear equations, with an infinity of unknowns, Math. Zeitschrift, 69, no 1(1955), 97 - 108.

SUBMITTED: November 30, 1959

X

Card 11/11

KHAVINSON, S. Ya.

Some aspects of the completeness of systems. Dokl. AN SSSR 137  
no.4:793-796 Ap '61. (MIRA 14:3)

1. Predstavлено академиком S. N. Bernshteynom.  
(Spaces, Generalized)

KHAVIN, V.P.; KHAVIMSON, S.Ya.

Some evaluations of analytical capacity. Dokl.AN SSSR. 138 no.4:  
789-792 Je '61. (MIRA 14:5)

1. Predstavлено академиком V.I.Smirnovym.  
(Topology)

MARKUSHEVICH, A.I.; VIDENSKIY, V.S., red.; KHAVINSON, S.Ya., red.;  
MURASHOVA, N.Ya., tekhn. red.

[Studies on present-day problems in the theory of functions of  
complex variables (collected articles)] Issledovaniia po sovremen-  
nym problemam teorii funktsii kompleksnogo peremennogo (sbornik  
statei); doklady. Pod red. A.I. Markushevicha. Moskva, Gos.izd-vo  
fiziko-matem.lit-ry, 1960. 544 p. (MIRA 15:1)

1. Vsesoyuznaya konferentsiya po teorii funktsii kompleksnogo  
peremennogo, 4th, Moscow, 1958.  
(Functions of complex variables)

KHAVINSON, S.Ya.

Two classes of extremum problems for polynomials and moments.  
Izv.AN SSSR.Ser.mat. 25 no.4:557-590 Jl-Ag '61.

(MIRA 14:8)

(Moment spaces)

KHAVINSON, S. Ya. (Moskva)

Analytical capacity of sets, compatible nontriviality of  
different classes of analytical functions, and Schwarz's  
lemma in arbitrary regions. Mat. sbor. 54 no.1:3-50 My '61.  
(MIRA 14:7)

(Functions, Analytic)  
(Aggregates)

in the title of de  
la Vallée Poussin's Theorem

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721910020-9"

10. Neins' results concerning Milouche's problem

11. Some inequalities for analytic functions on a circle

12. Functions of bounded characteristic

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9

REF ID: A6513

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9"

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9"

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9"

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9"

KHAVINSON, S.Ya.

The Rudin - Carleson theorem. Dokl. AN SSSR 165 no.3:497-499  
N '65. (MIRA 18:11)

I. Moskovskiy inzhenerno-stroitel'nyy institut im. V.V.  
Kuybysheva. Submitted April 12, 1965.

16.4100

86386

S/020/60/135/002/006/036

C111/C222

AUTHOR: Khavinson, S.Ya.

TITLE: Extremum Problems for Functions Satisfying Some Supplementary  
Restrictions Inside the Region and the Application of These  
Problems to ApproximationPERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 2,  
pp. 270 - 273

TEXT: Theorem 1 : Let  $E$  and  $E_1$  be linear locally convex topological spaces;  
 $\mathcal{E} \subset E$  subspace in  $E$  ;  $N\varphi$  be a continuous linear operator of  $E_1$  in  $E$  ;  
 $f_0 \in E$  be an arbitrary element ;  $P(f)$  and  $P_1(\varphi)$  be continuous symmetrical  
convex functionals in  $E$  resp. in  $E_1$ . Let  $T$  denote the set of linear functionals  
 $l(f)$  on  $E$  for which

$$(1.1) \quad l(f) = 0, f \in \mathcal{E}; |l(F)| \leq P(F), F \in E; |l(N\varphi)| \leq P_1(\varphi), \varphi \in E_1.$$

Then  
(1.2) 
$$\sup_{l \in T} |l(f_0)| = \inf_{f \in \mathcal{E}, \varphi \in E_1} [P(f_0 - f - N\varphi) + P_1(\varphi)] .$$

Card 1/5

Extremum Problems for Functions Satisfying  
Some Supplementary Restrictions Inside the  
Region and the Application of These Problems  
to Approximation

86386  
S/020/60/135/002/006/036  
C111/C222

There always exists an extremal functional  $l^* \in T$ .  
Theorem 2 contains an assertion dual to that of theorem 1.  
Let  $G$  be a finitely connected domain with the rectifiable boundary  $\Gamma$ ;  
let  $\varrho(\zeta)$  be a weight function, where

(2.1)  $0 < m \leq \varrho(\zeta) \leq M < +\infty, \zeta \in \Gamma$ ;

$B_{\varrho(\zeta)}$  is the class of unique bounded analytic functions in  $G$  for which

(2.2)  $|f(\zeta)| \leq \varrho(\zeta)$

almost everywhere on  $\Gamma$ .

Theorem 3 : Let  $B_{\varrho(\zeta), \varepsilon}$  be a subclass of  $B_{\varrho(\zeta)}$  for which beside of (2.2)  
it holds

(0.2)  $|f(z)| \leq \varepsilon < 1, z \in D$ ,

where  $D \subset G$ . For every summable  $\omega(\zeta)$  on  $\Gamma$  it holds

Card 2/5

86386

Extremum Problems for Functions Satisfying  
Some Supplementary Restrictions Inside the  
Region and the Application of These Problems  
to Approximation

S/020/60/135/092/006/036  
C111/C222

$$(2.3) \sup_{f \in B_{\xi, \epsilon}} \left| \int_{\Gamma} f(\zeta) \omega(\zeta) d\zeta \right| = \inf_{\substack{\lambda \\ \varphi \in E_1(G)}} \left[ \int_{\Gamma} |\zeta(\zeta)| \omega(\zeta) - \int_D \frac{d\lambda}{t-\zeta} - \varphi(\zeta) ds + \epsilon \int_D |d\lambda| \right], \quad \checkmark$$

where  $d\lambda$  is an arbitrary measure on  $D$ ; the class  $E_1(G)$  consists of functions representable with the aid of a Cauchy integral by their boundary values. Relations of the type (2.3) are also valid if (0.2) is replaced by other conditions (e.g. of integral kind). In certain cases it can be admitted that  $D \cap \Gamma \neq \emptyset$ ; instead of the class  $B_{\xi, \epsilon}$  one may start from the class  $E_p$  etc.

Theorem 4 : In order that  $f^*(z), \varphi^*(z), \lambda^*$  are extremal in (2.3) (for  $D \subset G$ ) it is necessary and sufficient that almost everywhere on  $\Gamma$

Card 3/5

86386

Extremum Problems for Functions Satisfying  
Some Supplementary Restrictions Inside the  
Region and the Application of These Problems  
to Approximation

S/020/60/135/002/006/036  
C111/C222

$$(2.4) \quad f^*(\zeta) \left[ \omega(\zeta) - \int_D \frac{d\lambda^*}{t-\zeta} - \varphi^*(\zeta) \right] d\zeta = e^{i\alpha} g(\zeta) / \omega(\zeta) - \\ - \int_D \frac{d\lambda^*}{t-\zeta} - \varphi^*(\zeta) | ds$$

and almost everywhere with respect to the measure  $d\lambda^*$  on D it holds :

$$(2.5) \quad f^*(t)d\lambda^* = e^{i\alpha} \varepsilon |d\lambda^*| .$$

The  $f^*(z)$  is unique up to the factor  $e^{i\alpha}$ .

The theorems 5, 6, and 7 are specializations.

With the aid of (2.3) it is furthermore stated :

Theorem 8 : If  $|f(z)| \leq 1$  for  $|z| < 1$ ;  $|f(\alpha_j)| \leq \varepsilon_j < 1$ ,  $|\alpha_j| < 1$ ,

$j = 1, \dots, n$ , then

$$(3.1) \quad |f(z)| \leq \prod_{j=1}^n \left| \frac{z - \alpha_j}{1 - \bar{\alpha}_j z} \right| \left[ 1 + \sum_{j=1}^n \varepsilon_j \left( 1 - \left| \frac{z - \alpha_j}{1 - \bar{\alpha}_j z} \right|^2 \right) \left| \frac{1 - \bar{\alpha}_j z}{z - \alpha_j} \right| \prod_{k=1, k \neq j}^n \left| \frac{1 - \bar{\alpha}_k \alpha_j}{\alpha_j - \bar{\alpha}_k} \right| \right]$$

Card 4/5

Extremum Problems for Functions Satisfying  
Some Supplementary Restrictions Inside the  
Region and the Application of These Problems  
to Approximation

86386  
S/020/60/135/002/006/036  
C111/C222

Theorem 9 : Let  $|\alpha_n| < 1$ ,  $n = 1, 2, \dots$  ;

$$(4.1) \quad \sum_{n=1}^{\infty} (1 - |\alpha_n|) = \infty, \quad \frac{|\alpha_n| - |\alpha_{n-1}|}{(1 - |\alpha_n|)(1 - |\alpha_{n-1}|)} \geq d > 0,$$

where  $d > 0$  does not depend on  $n$ . If a certain function  $f(z)$  satisfies the condition

$$(4.2) \quad \lim_{n \rightarrow \infty} \ln |f(\alpha_n)| / (1 - |\alpha_n|) = -\infty,$$

then  $f(z) \equiv 0$ .

The author mentions S.N. Mergel'yan, A.L. Shaginyan, M.M. Dzhrashyan,  
M.M. Lavrent'yev, I.V. Ushakova and A.A. Shaginyan. - There are 18 references:  
13 Soviet, 1 Finnish, 1 English, 1 French and 2 American.

ASSOCIATION: Moskovskiy inzhenerno-stroitel'nyy institut imeni V.V. Kuybysheva  
(Moscow Civil-Engineering Institute imeni V.V. Kuybyshev)

PRESENTED: June 10, 1960, by V.I. Smirnov, Academician

SUBMITTED: May, 23, 1960

Card 5/5

MANUKYAN, A.A.; GLUSHKOV, V.P.; SHVEDKOVA, V.M.; SVIRIDOVA, Z.P.; CHEBOTA-  
REVA, Ye.A.; SHUMILIN, V.I.; PUDINA, K.V.; BRAGINA, N.M.; LUTSKAYA,  
Ye.Ye.; KODACHENKO, A.S.; KOSOVA, V.A.; MOKLYARSKIY, B.I.; GRECHIKHIN,  
A.A.; KULIKOV, N.I.; RYDVANOV, N.F.; BEL'CHUK, A.I.; VINTSER, Yu.I.;  
ROZENTAL', Ye.I.; BELOUS, T.Ya.; SIDOROV, V.F.; ZHDANOVA, L.P.;  
ALEKSANDROVSKAYA, L.I.; KOVAL', V.V.; KHAVINSON, Ya.S., glavnnyy red.;  
SOKOLOV, I.A., zam.glavnogo red.; ALEKSEYEV, A.M., red.; ARZUMANIAN,  
A.A., red.; BELYAKOV, A.S., red.; BECHIN, A.I., red.; VARGA, Ye.S.,  
red.; LEMIN, I.M., red.; LYUBIMOVA, V.V., red.; SKOROV, G.Ye., red.  
V redaktsirovani uchastvovali: SHAPIRO, A.I., red.; TATISHCHEV, S.I..  
KOVREGINA, Ye., tekhn.red.

[Economic conditions of capitalistic countries; review of business  
conditions for 1958 and the beginning of 1959] Ekonomicheskoe polo-  
zhenie kapitalisticheskikh stran; konfjunktturnyi obzor za 1958 g.  
i nachalo 1959 g. Moskva, Izd-vo "Pravda," 1959. 127 p. (Prilo-  
zhenie k zhurnalu "Mirovaya ekonomika i mezhdunarodnye otnosheniia,"  
no.8, avgust 1959 g.) (MIRA 12:9)

1. Akademiya nauk SSSR. Institut mirovoy ekonomiki i mezhdunarodnykh  
otnosheniy. 2. Kollektiv sotrudnikov konfjunktturnogo sektora Insti-  
tuta mirovoy ekonomiki i mezhdunarodnykh otnosheniy AN SSSR (for  
Glushkov, Shvedkova, Sviridova, Chebotareva, Shumilin, Pudina, Bragina,  
Lutskaya, Kodachenko, Kosova, Moklyarskiy, Grechikhin, Kulikov, Rydva-  
nov, Bel'chuk, Vintser, Rozental', Belous, Sidorov, Zhdanova, Alek-  
sandrovskaya, Koval'). (Economic conditions)

GARBUZ, Nikolay Afanas'yevich, doktor tekhn. nauk; KHAVLISON, Yu. I.,  
red.; KARAS', V.D., tekhn. red.

[Bimetallic machine parts] Bimetallicheskie detali mashin.  
[Irkutsk] Irkutskoe knizhnoe izd-vo, 1963. 65 p.  
(MIRA 16:9)

(Laminated metals)  
(Machinery--Design and construction)

KAZANSKIY, Aleksandr Mikhaylovich; KHAVINSON, Yu.I., red.

[Agricultural production costs and ways to reduce them;  
using the example of the collective and state farms of  
Irkutsk Province] Sebestoimost' sel'skokhoziaistvennoi  
produktsii i puti ee snizheniya; na primerakh sovkhozov  
i kolkhozov Irkutskoi oblasti. Irkutsk, Vostochno-  
Sibirskoe knizhnoe izd-vo, 1964. 88 p. (MIRA 17:8)

GAVRILOV, Aleksandr Nikanorovich; KHAVINSON, Yu.I., red.;  
PONOMAREVA, A.V., tekhn. red.

[Maintenance and adjustment of the electrical equipment of  
motor vehicles and tractors] Tekhnicheskoe obsluzhivanie i  
regulirovka avtotraktornogo elektrooborudovaniia. Irkutsk,  
Irkutskoe knizhnoe izd-vo, 1963. 78 p. (MIRA 17:1)

MINEVSKIY, Anatoliy Iosifovich; KHAVINSON, Yu.I., red.;  
PONOMAREVA, A.V., tekhn. red.

[Potentials in the use of machine-tool equipment] Rezervy  
ispol'zovaniia stanochnogo oborudovaniia. Irkutsk, Irkut-  
skoe knizhnoe izd-vo, 1963. 95 p. (MIRA 16:12)  
(Metal cutting--Production standards) (Machine tools)

REVYAKIN, Vasiliy Petrovich, doktor tekhn. nauk; SHEVNIN, Aleksandr Mikhaylovich, dots.; KHAVINSON, Yu.I., red.

[Organization of machine repair on a year-round schedule on the collective and state farms in Eastern Siberia] Organizatsiya remonta mashin po kruglogodovomu grafiku v sovkhozakh i kolkhozakh Vostochnoi Sibiri. Irkutsk, Irkutskoe knizhnoe izd-vo, 1963. 87 p. (MIRA 17:4)

TUMANOV, Yuriy Petrovich; KHAVINSON, Yu.I., red.

[Working time and leisure] Rabochee i svobodnoe vremya.  
Irkutsk, Vostochno-Sibirskae knizhnoe izd-vo, 1964. 94 p.  
(MIRA 18:2)

KHAVISON, S. Ya.

Doc Phys-Math Sci - (diss) "Method of duality in extremal and approximation problems in the theory of functions." Moscow, 1961. 14 pp; (Moscow State Univ imeni M. V. Lomonosov, Mechanics-mathematics faculty); 200 copies; price not given; bibliography on pp 12-14 (19 entries); (KL, 5-61 sup, 171)

KHAVKIN, A. B.

33506

K Klinike Legochnykh Nagnoyeniy. Trudy Kurskogo Gos. Med. In-Ta, T. 11, Vyp. 2, 1948,  
c. 71-74.

SO: Letopis' Zhurnal'nykh Statey, Vol. 45, Maskva, 1949

TURYANSKIY, L.P., inzh.; KHAVKIN, A.Ya., inzh.

Concreting protective sheathing of the OKG-100-2 waste-heat  
boilers at a converter plant. Mont. i spets. rab. v stroi. 25  
no.11:22-23 N '63. (MIRA 17:1)

l. Nizhne-Tagil'skiy uchastok Gosudarstvennogo soyuznogo  
stroitel'no-montazhnogo tresta obnevoy teplotekhniki.

GERLOVIN, Lazar' Izrailevich; SLUTSKER, Semen Moiseyevich; YENIN,  
V.I., kand. tekhn. nauk, retsenzent; KAVKIN, A.Ye., inzh.,  
retsenzent; NIKONOV, A.A., nauchnyy red.; NIKITINA, R.D.,  
red.; SHISHKOVA, L.M., tekhn. red.

[Marine waste heat and combination boilers] Sudovye utiliza-  
tsionnye i kombinirovannye kotly. Leningrad, Sudpromgiz,  
1962. 250 p.  
(Boilers, Marine) (Heat regenerators)

DOROSHENKO, Pavel Aleksandrovich; GOLOMB, A.S., inzh., retsenzent;  
KHYAPCHENKOV, A.S., kand. tekhn. nauk, retsenzent;  
KHAVKIN, A.Ye., nauchn. red.; TIKHONOV, Yu.I., red.

[Manufacture of marine boilers and heat exchangers; materials  
and technology] Proizvodstvo sudovykh kotlov i teploobmennykh  
apparatus; materialy i tekhnologija. Leningrad, Sudostroenie,  
(MIRA 18:3)  
1964. 219 p.

KHAVKIN, A.Yu.

KHAVKIN, A.Yu.

Water cooled switches for high-frequency vacuum-tube generators.  
Stan. i instr. 28 no.12:34-35 D '57. (MIRA 10:12)  
(Electric switchgear)

*Khavkin D.A.*  
KHAVKIN, D.A., mayor meditsinskoy sluzhby

Hepatitis as a complication in treating pulmonary tuberculosis.  
with thibone. Voen.-med.zhur. no.7:86 Jl. '57. (MIRA 11:1)  
(ACETANILIDE) (TUBERCULOSIS) (LIVER--DISEASES)

KHAVKIN, D.A.

Complications in streptomycin therapy of tuberculosis. Probl.tub,  
36 no.5:111-113 '58  
(MIRAll:8)

1. Po materialam garnizonnogo lazareta.  
(STREPTOMYCIN, inj.eff:  
side eff. in ther. (Rus))

KHAVKIN, D.Z.

Blood transfusion as a method of preventing and eliminating  
side effects of antibacterial preparations. Probl. tub. 42  
no.10:87-88 '64. (MIRA 18:11)

KHAVKIN, E.Ye.; PLESHKOV, B.P., kand. biol. nauk

Physiological activeness of urea [with summary in English]. Izv.  
TSKhA no. 3:215-222 '58. (MIRA 11:7)

(Urea)  
(Plants--Physiology)

MEDVEDEV, Zh.A., kand.biologicheskikh nauk; KHAVKIN, E.Ye., aspirant

Nucleotide peptides, a new group of biologically important compounds. Izv. TSKhA no.2:188-199 '62. (MIRA 15:9)

1. Vostochno-Sibirskiy biologicheskiy institut Sibirskogo  
otdeleniya AN SSSR (for Khavkin).  
(Nucleotides) (Peptides)

KHAVKIN, E.Ye.

Iron accumulation in leaves as a function of age. Dokl. AN  
SSSR 156 no. 2;474-477 My '64. (MIRA 17:7)

1. Moskovskaya sel'skokhozyaystvennaya akademiya imeni  
Timiryazeva. Predstavлено akademikom A.L.Kursanovym.

KHAVKIN, E.Ye.; MEDVEDEV, Zh.A.

Effect of stimulation and adenosine triphosphate on the inclusion of C<sup>14</sup> tyrosine into the proteins of leaf chloroplasts of beans. Dokl. AN SSSR 150 no.6:1385-1388 Je '63. (MIRA 16:8)

1. Moskovskaya sel'skokhozyaystvennaya akademiya im. K.A.Timiryazeva i Vostochno-Sibirskiy biologicheskiy institut Sibirskego otdeleniya AN SSSR. Predstavлено akademikom A.I.Oparinym.  
(PROTEIN METABOLISM) (PLANTS, EFFECT OF LIGHT ON)  
(ADENOSINE TRIPHOSPHATE) (TYROSINE)

KHAVKIN, E.Ye.

Age-dependent changes in free amino acids and the accumulation  
of  $\gamma$ -aminobutyric acid in bean leaves. Fiziol. rast. 11  
no.5:862-866 S-O '64. (MIRA 17:10)

1. Vostochno-Sibirskiy biologicheskiy institut Sibirskogo  
otdeleniya AN SSSR, Irkutsk.

SEZENOVA, E.G., aspirant; KHAKIN, E.Ye., aspirant

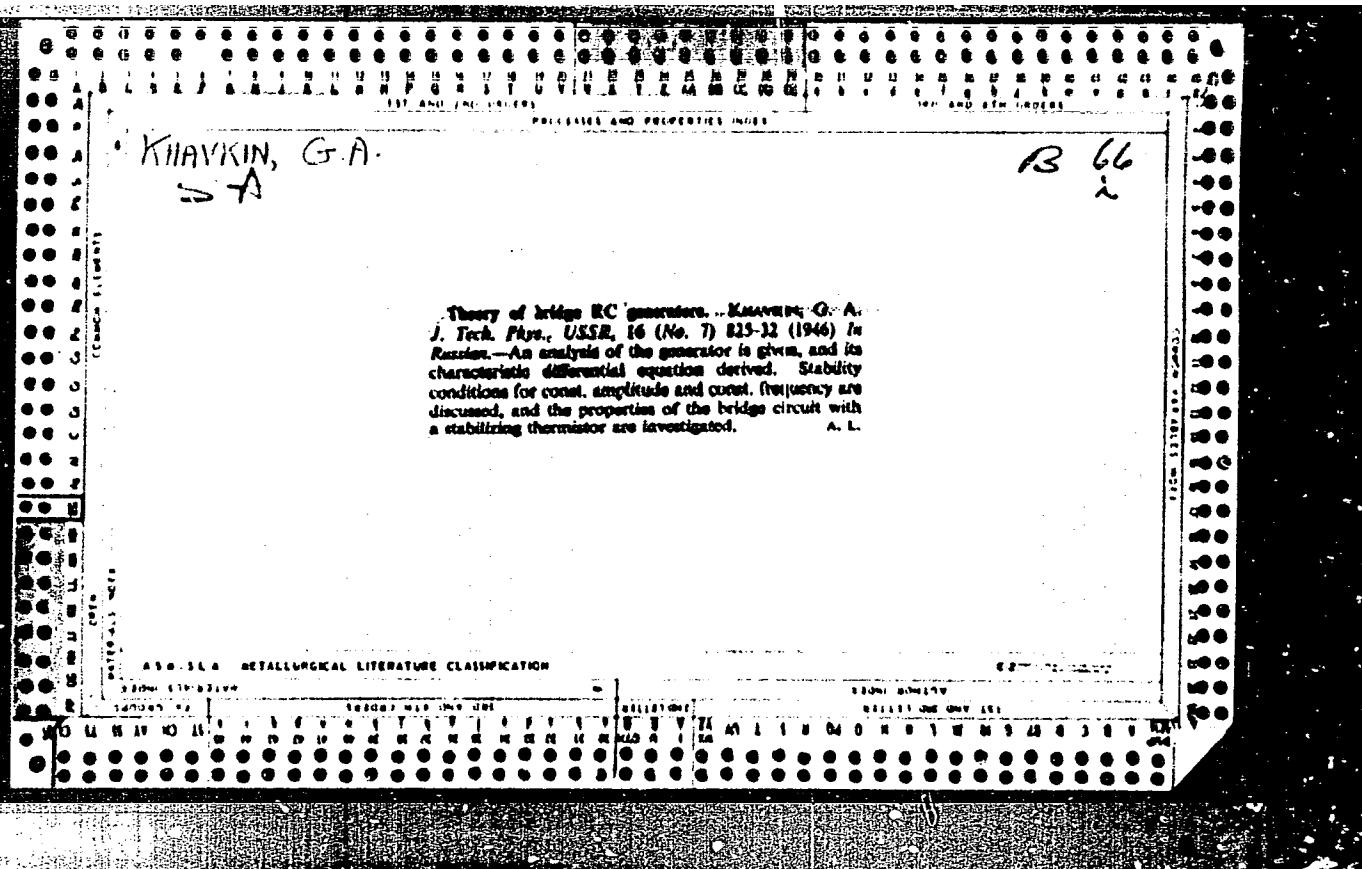
*Age-related changes of the content of various nitrogen forms in broad bean and kidney bean leaves.* Izv. TGU no.2:182-192 '64.

(MIRA 17:12)

I. Kafedra agrokhimii Moskovskoy ordena Lenina sel'skokhozyaystvennoy akademii ikoni K.A. Timiryazeva.

ARASLANOV, M.A.; GABITOV, G.S.; MILYUKOVSKIY, G.Ye.; RAYTMAN, Ye.A.;  
KORCHEMGIN, N.I.; KHAVKIN, P.A.; PEREVALOV, L.N.; KHROMUSHKIN,  
M.K.

Improvement of artificial sole leather drying techniques and  
decreased dispensing of fiber in artificial leather for shoe  
counters. Prom.energ. 18 no.2;9 F '63. (MIRA 16:2)  
(Leather, Artificial--Drying)



KHAVKIN, G. A.

PA 32/49T16

USSR/Electronics

Sep 48

Synchronous Machines  
Oscillators

"The Problem of Synchronizing Relaxation Oscillators  
on the Undertone," G. A. Khavkin, Inst of  
Phys., Moscow State U, 2 pp

"Zhur Tekh Fiz" Vol XVIII, No 9

Describes experiment on this subject. Discusses  
oscillometric figures obtained. Submitted  
24 Mar 48.

32/49T16

PA 18/49T16

KHAVKIN, G. A.

USSR/Electronics  
Oscillators, Electron Coupled  
Circuits, Oscillator

Nov 48

"Theory of an Oscillator for an Amplifier With  
Cathode Coupling," G. A. Khavkin, Inst of Phys,  
Moscow State U, 5 pp

"Zhur Tekh Fiz" Vol XVIII, No 11

Results of experiments conducted to determine  
operation of a simple LC-generator operating off  
an amplifier with cathode coupling. Studies  
inertia-nonlinear stabilization in oscillator  
circuit. Submitted 5 Feb 48.

18/49T16

ALEKPEROV, V.P., inzh.; ATOVMYAN, I.O., inzh.; ZUYEV, V.I., inzh.; KAVUN, Ye.S., kand.tekhn.nauk; KOGAN, B.Ya., kand.tekhn.nauk; KOPAY-GORA, P.N., kand.tekhn.nauk; KULAKOV, A.A., inzh.; LEBEDEV, A.N., kand. tekhn.nauk; PAPERNOV, A.A., doktor tekhn.nauk; PEL'POR, D.S., doktor tekhn.nauk; PLOTNIKOV, V.N., kand.tekhn.nauk; RUZSKIY, Yu.Ye., kand.tekhn.nauk; SOLODOVNIKOV, V.V., doktor tekhn.nauk; TOPCHEYEV, Yu.I., kand.tekhn.nauk; ULENOV, G.M., kand.tekhn.nauk; SHRAMKO, L.S., kand.tekhn.nauk; DOBROGURSKIY, S.O., doktor tekhn. nauk, retsenzent; KAZAKOV, V.A., kand.tekhn.nauk, retsenzent; PETROV, V.V., kand.tekhn.nauk, retsenzent; KHAVKIN, G.A., inzh., retsenzent; SOLODOVNIKOV, V.V., prof., doktor tekhn.nauk, red.; VITENBERG, I.M., kand.tekhn.nauk, nauchnyy red.; MOLDAVER, A.I., kand.tekhn.nauk, nauchnyy red.; KHETAGUROV, Ya.A., kand.tekhn.nauk, nauchnyy red.; POLYAKOV, G.F., red.izd-va; KONOVALOV, G.M., red. izd-va; SOKOLOVA, T.F., tekhn.red.

[Fundamentals of automatic control] Osnovy avtomaticheskogo regulirovaniia. Vol.2. [Elements of automatic control systems] Elementy sistem avtomaticheskogo regulirovaniia. Pt 2. [Compensating elements and computer components] Korrektiruushchie elementy i elementy vychislitel'nykh mashin. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry. 1959. 453 p. (MIRA 12:4)  
(Automatic control) (Electronic apparatus and appliances)  
(Electronic calculating machines)

KHAVKIN, G.A.; KOKOSOV, L.V., red.; VLASOVA, N.I., tekhn. red.

[Memory devices of electronic digital computers] Zapominaiushchie ustroistva tsifrovых vychislitel'nykh mashin. Moskva, (MIRA 15:7)  
Moskva, Gosatomizdat, 1961. 150 p.  
(Electronic digital computers)

SVERDLOV, Matvey Il'ich, kand. tekhn. nauk; KHAJKIN, Il'ya  
Yakovlevich, inzh.; CHERNYAKOVA, I.Z., inzh., red.; FREGER,  
D.P., red.izd-va; GVIPTS, V.L., tekhn. red.

[Determining the suitability of thin-sheet materials for deep  
drawing] K voprosu opredelenia prigodnosti tonkolistovkh ma-  
terialov k glubokoi vytiazhke. Leningrad, 1962. 20 p. (Lenin-  
gradskii dom nauchno-tehnicheskoi propagandy. Obmen peredovym  
opytom. Seriya: Goriachaisia i kholodnaia obrabotka metallov  
davleniem, no.5)  
(Deep drawing (Metalwork))

KHAVKIN, I. A.

KHVALIN, I. A. --"Investigation of the Effect of the Speed of an Automobile Moving on Vertical Curves on Stabilization of the Mechanics of the Technological Profile of Automobile Roads." \*(Dissertations for Degrees in Science) (Candidate of Technical Sciences) at USSR Higher Educational Institutions) MIn of Higher Education, Ukrainian SSR, Kiev Automobile Road Inst, Kiev, 1965

SO: Knizhnyaya Letopis', No. 25, 12 Jun 55

\* For Degree of Doctor of Technical Sciences

KHAVKIN, K.A., kand. tekhn. nuk.

Investigating the effect of vertical curves on the speed of  
automobiles in connection with designing longitudinal profiles  
of highway elements. Trudy Kiev. avt.-dor. inst. no.3:24-37 '57.  
(MIRA 11:5)  
(Roads—Design)

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9

KHAVEIN, K.A., kand.techn. наук

Mirrors used on Czechoslovak roads. Avt.dor. 21 no.9:31 S '58.  
(MIRA 11:11)

(Czechoslovakia--Mirrors) (Czechoslovakia--Traffic signs and signals)

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9"

KHAVKIN, K.A., kand.tekhn.nauk

Utilization of electronic computing machines for designing  
longitudinal highway profiles. Avt.dor. 22 no.11;13-14  
N 159. (MIRA 13:2)  
(Roads--Surveying)

SIBIRKO, Antonina Nikolayevna; KHAVKIN, Klementiy Aronovich; BABKOV, V.F.,  
red.; GANYUSHIN, A.I., red. izd-va; GALAKTICHNOVA, Ye.N., tekhn.  
red.

[Calculation of volumes of road earthwork on electronic  
calculating machines] Podschet ob'emov zemlianykh rabot avto-  
mobil'nykh dorog na elektronnykh vychislitel'nykh mashinakh.  
Moskva, Avtotransizdat, 1962. 79 p. (MIRA 15:10)  
(Electronic calculating machines) (Roads--Design)  
(Earthwork)

KHAVKIN, K.A.; SOKOLIK, A.F.; GAL'PERIN, I.M.

A machine computes the volume of earthwork. Avt.dor. 26 no.4:  
21-22 Ap '63. (MIRA 16:4)  
(Earthwork—Tables, calculations, etc.)  
(Electronic computers)

KHAVKIN, K., kand. tekhn. nauk; GALUSHKO, G., inzh.

Using electronic computers in designing the longitudinal road profile by the method of reference points. Avt. dor. no.10:  
9-1C O '64. (MIRA 17-12)

KHAVKIN, K.A., kand.tekhn.nauk

Considering vehicular traffic conditions in designing  
the longitudinal profile. Avt.dor.i dor.stroi. no.1:15-  
25 '65. (MIRA 18:11)

KHAVKIN, L.

Experimental houses made without cement. Na stroi. Ros. 3 no.3:21-24  
Mr '62. (MIRA 1:2)

1. Rukovoditel' laboratorii i eksperimental'nogo proizvodstva  
silikatobetonnykh konstruktsiy Respublikanskogo nauchno-issledovatel'skogo  
instituta mestnykh stroitel'nykh materialov RSFSR.  
(Sand-lime products) (Apartment houses)

KHAVKIN, L. F.

USSR / Pharmacology, Toxicology, Cardiovascular Drugs. V

Abs Jour : Ref Zhur - Biol., No 20, 1958, No 94307

Authors : Raskina, R. I.; Khavkin, L. F.

Inst : The Belorussian Scientific Research Dermato-Venerological Institute.

Title : Treatment of Purulent Skin Diseases with Furacillin.

Orig Pub : Sb. nauchn. rabot. Belorussk. n.-i. kozhno-venerol. in-t, 1957, 5, 217-219.

Abstract : No abstract given.

C<sup>4</sup>rd 1/1

KHAVKIN, L. F.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721910020-

Our experience in reducing purulent and occupational skin diseases.  
Zdrav. Belor. 5 no.2:49-50 F '59. (MIRA 12:7)

1. Kozhno-venerologicheskiy kabinet ob'yedinnenoy bol'nitsy Minskogo  
avtomobil'nogo zavoda (glavnnyy vrach A.P. Kabakov).  
(MINSK--AUTOMOBILE INDUSTRY WORKERS--DISEASES AND HYGIENE)  
(SKIN--DISEASES)

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9"

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9"

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721910020-9"

Properties of lime-clay mixes as affected by the initial  
moisture of the clay and duration of mixing. L. M. Avery  
and J. W. Turner. Trade Rep. Nauch.-Tekhn. Inform.  
Promst. Stroitel. Materialov 1954, No. 7, no. 72, Kremenchuk,  
USSR, April 1955, No. 7059. In mixing lime with the  
clay with ground unslaked lime, the % of moisture which  
equals the amt. of added lime. The mix becomes dry, tough  
and powdery. The required time of mixing is not  
more than 10 min. and if heat is used, not more than 5 min.  
is advisable after the mixing to finish the drying for  
the mixes. At an ordinary moisture content of 10-12%  
primary drying of the clay is unnecessary.

KHAVKIN, L. M.

AID P - 2791

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 19/19

Authors : Butt, Yu. M., L. M. Khavkin, S. A. Krzheminskiy, and  
S. N. Levin

Title : Hint, I. "O nekotorykh osnovykh voprosakh avtoklavnogo  
izgotovleniya izvestkovo-peschanykh izdeliy". Some  
fundamental problems of manufacturing sand-lime  
materials in autoclaves, Tallin, 1954. (Book Review)

Periodical : Zhur. prikl. khim. 28, 4, 449-452, 1955

Abstract : Critical review

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721910020-9  
red.; GUZMAN, M.A., red.; GABRIELINA, L.A., tekhn.red.

[Production of silica tile in sheathing forms] Proizvodstvo  
silikatnoi cherepitay v kassetnykh formakh. Moskva, Promstroi-  
izdat, 1958. 83 p.  
(Tiles)

KHAVKIN, L.M., inzh.

Important material for expanding industrialized housing construction.  
Stroi. mat. 7 no. 1:13-15 Ja '61. (MIRA 14:1)  
(Lightweight concrete) (Sand-lime products)

GUSAKOV, V.N., kand. tekhn. nauk; SHVARTSZAYD, M.S., kand. tekhn. nauk; KAMEYKO, V.A., kand. tekhn. nauk; LEWIN, N.I., kand. tekhn. nauk; KHAVKIN, L.M., inzh.; SKATYNSKIY, V.I., kand. tekhn. nauk; KRASNYY, I.M., kand. tekhn. nauk; NEMIROVSKIY, Ya.M., kand. tekhn. nauk; TEPKIN, L.Ye., inzh., red.; STRASHNYKH, V.P., red. izd-va; BOROVNEV, N.K., tekhn. red.

[Instructions SN 165-61 for designing articles made of autoclaved silicate concretes] Ukaazaniia po proektirovaniyu konstruktsii iz avtoklavnykh silikatnykh betonov CH 165-61. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 50 p.

(MIRA 14:12)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Vsesoyuznyy nauchno-issledovatel'skiy institut novykh stroitel'nykh materialov Akademii stroitel'stva i arkhitekturny SSSR (for Gusakov, Shvartszayd). 3. Vsesoyuznyy tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitekturny SSSR (Kameyko, Levin). 4. Respublikanskiy nauchno-issledovatel'skiy institut mestnykh stroitel'nykh materialov Vserossiyskogo soveta narodnogo khozyaystva (for Khavkin). 5. Nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitekturny USSR (for Skatynskiy). 6. Nauchno-issledovatel'skiy institut betona i zhelezobetona Akademii stroitel'stva i arkhitekturny SSSR (for Krasnyy, Nemirovskiy).

(Precast concrete)

(Sand-like products)

KHAVKIN, L.M., inzh.; VAL, D.I., inzh.; KURILENKO, Ye.S.

Placeability of lime-sand mixes under vibration in relation to  
their specific surface and the type of lime. Sbor. trud.  
ROSNIIMS no.17:14-145 '60. (MIRA 14:12)  
(Sand-lime products)

LITVINOVA, L.N., inzh.; KHAVKIN, L.M.

Study of prestressed elements made of silicate concrete, Sbor.  
trud. ROSNIIMS no. 19:36-41 '61. (MIRA 16:1)  
(Sand-lime products--Testing)

KHAVKIN, L.M., inzh.

Designing the composition of silicate concrete. Sbor. trud.  
ROSNIIMS no.19:42-50 '61. (MIRA 16:1)  
(Sand-lime products)